Electronic TUBES

12BH7-A

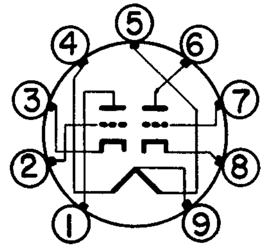
TWIN TRIODE

DESCRIPTION AND RATING

The 12BH7-A is a miniature, medium-mu twin triode designed primarily for use as a vertical-deflection amplifier in television receivers. In this application, the two sections may be employed in parallel, or they may be employed as a combined vertical-deflection amplifier and vertical oscillator. The tube is also suitable for use as the horizontal oscillator in television receivers as well as in a wide variety of general-purpose applications. Each section of the 12BH7-A features a relatively high plate current at low plate voltages and is capable of withstanding the high pulse voltages normally encountered in vertical-amplifier applications.

The 12BH7-A differs from the 12BH7 primarily by incorporating a controlled heater warm-up characteristic which makes the tube particularly suited for use in television receivers which employ 600-milliampere series-connected heaters.

BASING DIAGRAM



RETMA 9A

TERMINAL CONNECTIONS

Pin 1—Plate (Section 2)
Pin 2—Grid (Section 2)
Pin 3—Cathode (Section 2)
Pin 4—Heater
Pin 5—Heater
Pin 6—Plate (Section 1)
Pin 7—Grid (Section 1)
Pin 8—Cathode (Section 1)
Pin 9—Heater Center-Tap

GENERAL

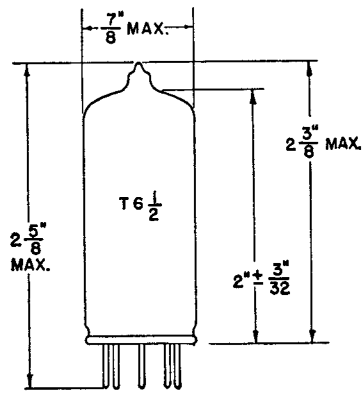
ELECTRICAL

	Series	Parallel	
Cathode—Coated Unipotential			
Heater Voltage, AC or DC	12.6	6.3	Volts
Heater Current	0.3	0.6	Amperes
Heater Warm-up Time*		11	Seconds
Direct Interelectrode Capacitances, approximate†			
Grid to Plate, Each Section		2.6	μμf
Input, Each Section		3.2	μμf
Output, Section 1		0.5	μμf
Output, Section 2		0.4	μμf
Plate to Plate		0.8	μμf

MECHANICAL

Mounting Position—Any
Envelope—T-6½, Glass
Base—E9-1, Small Button 9-Pin

PHYSICAL DIMENSIONS



RETMA 6-3

MAXIMUM RATINGS

DESIGN-CENTER VALUES UNLESS OTHERWISE INDICATED, EACH SECTION	Class A_1 Amplifier	Vertical-Deflection Amplifier‡	
DC Plate Voltage	300	450	Volts
Peak Positive Pulse Plate Voltage	...	1500§	Volts
Positive DC Grid Voltage	0	...	Volts
Negative DC Grid Voltage	50	...	Volts
Peak Negative Grid Voltage	...	250	Volts
Plate Dissipation	3.5	3.5π	Watts
DC Cathode Current	20	20	Milliamperes
Peak Cathode Current	...	70	Milliamperes
Heater-Cathode Voltage			
Heater Positive with Respect to Cathode			
DC Component	100	100	Volts
Total DC and Peak	200	200	Volts
Heater Negative with Respect to Cathode			
Total DC and Peak	200	200	Volts
Grid Circuit Resistance			
With Fixed Bias	0.25	...	Megohms
With Cathode Bias	1.0	2.2	Megohms

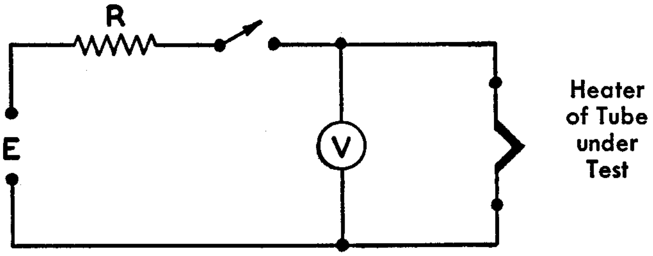
	Vertical-Oscillator Service‡	Horizontal-Oscillator Service‡	
DC Plate Voltage	450	450	Volts
Peak Negative Grid Voltage	400	600	Volts
Plate Dissipation	3.5	3.5	Watts
DC Cathode Current	20	20	Milliamperes
Peak Cathode Current	70	300	Milliamperes
Heater-Cathode Voltage			
Heater Positive with Respect to Cathode			
DC Component	100	100	Volts
Total DC and Peak	200	200	Volts
Heater Negative with Respect to Cathode			
Total DC and Peak	200	200	Volts
Grid Circuit Resistance			
With Fixed Bias	2.2	2.2	Megohms
With Cathode Bias	2.2	2.2	Megohms

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A_1 AMPLIFIER, EACH SECTION

Plate Voltage	250	250	Volts
Grid Voltage	−14	−10.5	Volts
Amplification Factor	...	16.5	
Plate Resistance, approximate	...	5300	Ohms
Transconductance	...	3100	Micromhos
Plate Current	4.0	11.5	Milliamperes
Grid Voltage, approximate			
I_b = 50 Microamperes	...	−23	Volts

* Heater warm-up time is defined as the time required in the circuit shown at the right for the voltage across the heater terminals (V) to increase from zero to the heater test voltage (V_1). For this type, E=25.0 volts (RMS or DC), V_1=5.0 volts (RMS or DC) and R=31.5 ohms.



† Without external shield.

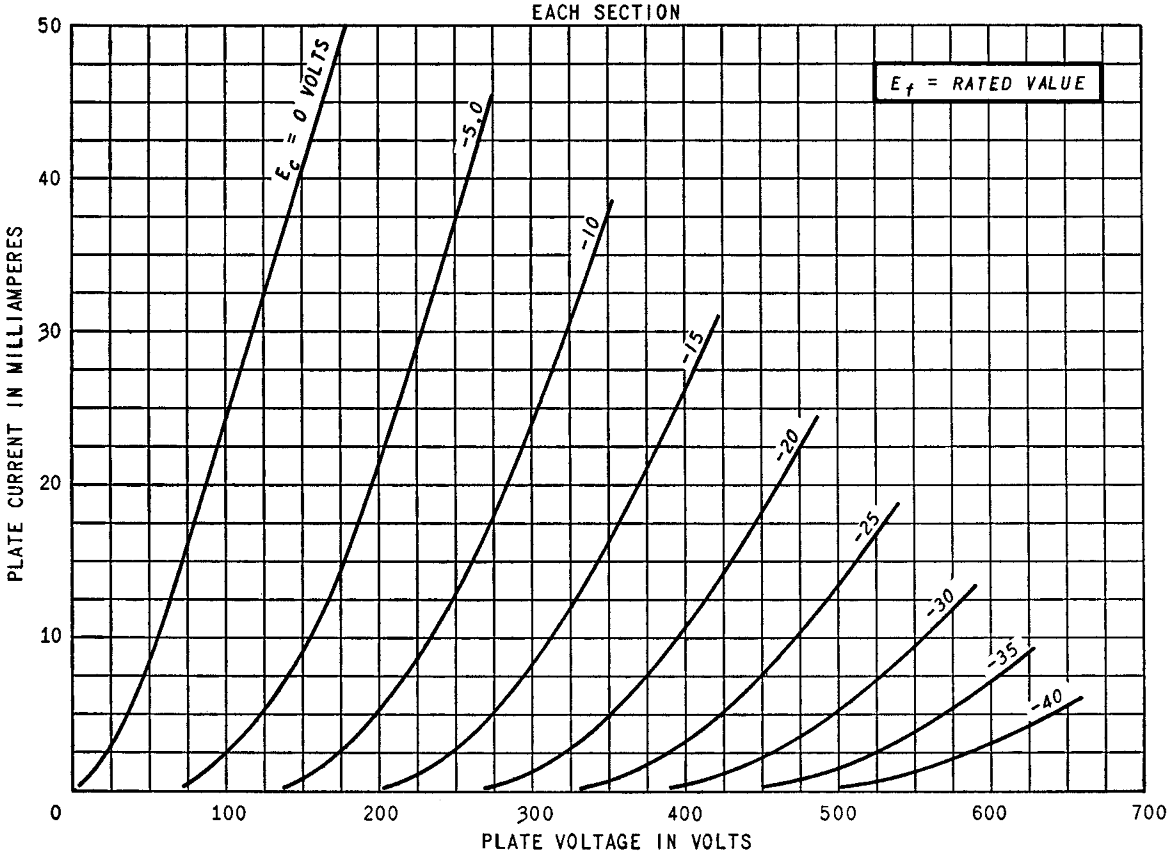
‡ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

§ Value given is to be considered as an Absolute Maximum Rating. In this case, the combined effect of supply voltage variation, manufacturing variation including components in the equipment, and adjustment of equipment controls should not cause the rated value to be exceeded.

π In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

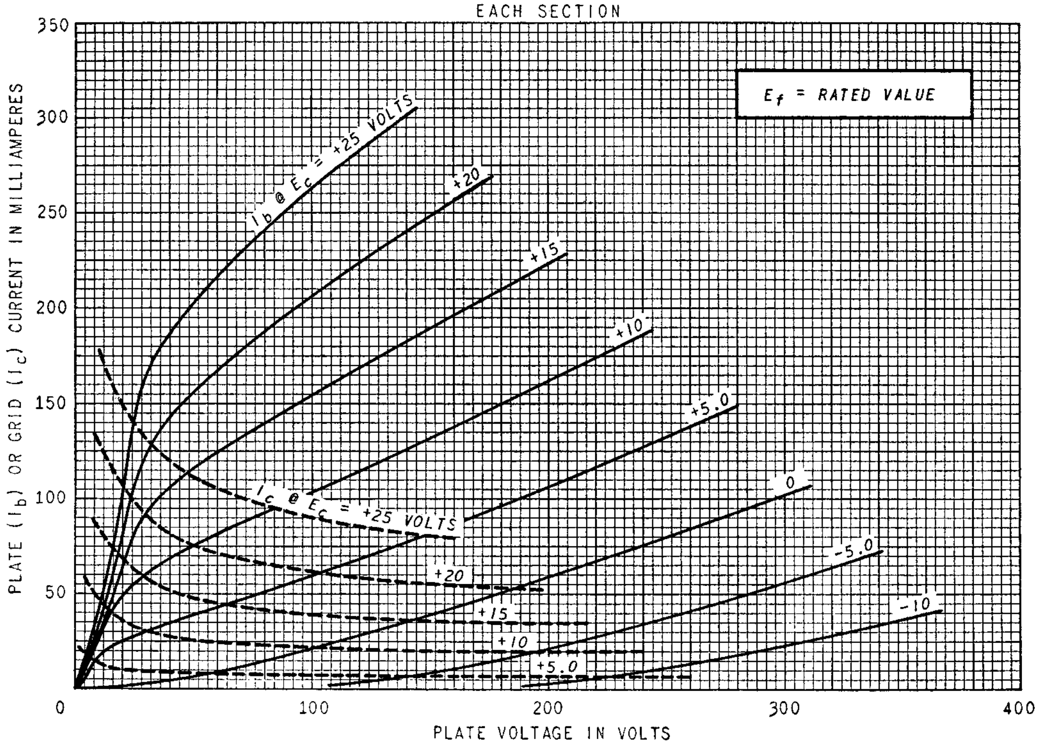
AVERAGE PLATE CHARACTERISTICS

EACH SECTION



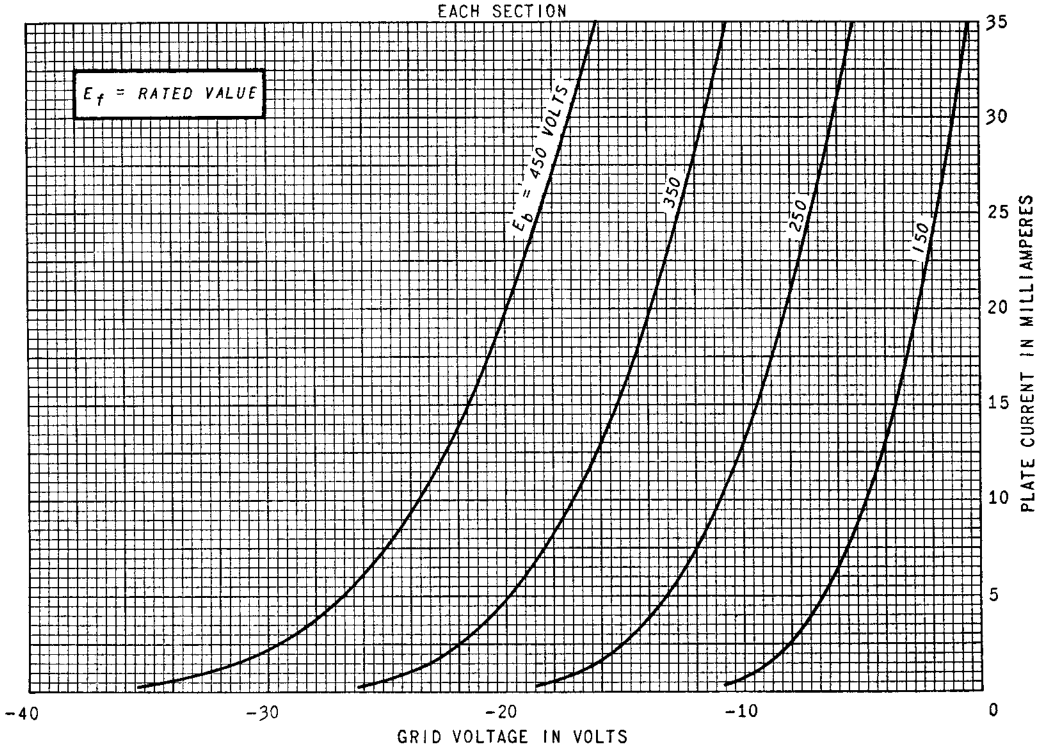
AVERAGE PLATE CHARACTERISTICS

EACH SECTION



AVERAGE TRANSFER CHARACTERISTICS

EACH SECTION



TUBE DEPARTMENT

GENERAL ELECTRIC

Schenectady 5, N. Y.